

IV. ADDENDUM TO THE AUSTRALIAN  
HYDROMEDUSÆ.

HYDRA HEXACTINELLA. Nova Species.

PLATE XLVIII., Fig. 1-4.

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In my paper, Monograph of the Australian Hydromedusæ, Part III. (Vol. IX., page 345 of these Proceedings), I mentioned three species as the Australian representatives of the genus *Hydra*. I found afterwards that the specimens described as distinct, under the names of *Hydra oligactis* and *Hydra fusca* respectively, are identical, and I place these in my amended catalogue (*Zeitschrift für wissenschaftliche Zoologie*, Band XLI., Seite 627) in the first species *Hydra oligactis*, Pallas. The reasons for this are given in the first Addendum to the Australian Hydromedusæ (Vol. IX., page 908, of these Proceedings.)

In Australasia we accordingly find the genus *Hydra* represented by two species:—

1. *Hydra oligactis*, Pallas, Victoria.
2. *Hydra viridis*, Linné, New Zealand.

To these two, a third species from New South Wales must now be added, which brings the total number of Australian species belonging to this order, up to 255.

HYDRA HEXACTINELLA. Nova Species.

This species can be distinguished from all other *Hydras* by the constancy in the number of arms, which is invariably six. These tentacles are all equal in length and thickness, and the angles between them are perfectly equal, measuring 60°. Such a

regularity has been observed in no other species. It appears that in this respect our Hydra is more highly developed than the others as the number of antimeres has been defined. The specific name is derived from this characteristic.

The body is perfectly cylindrical, and extends under circumstances to a length of 15 mm., whereby it becomes about 0.1 mm. thick. When contracted it measures 1 x 0.5 mm. In the extended state the body curves in a very graceful manner. The surface of attachment is 0.4 mm. in diameter. The whole of the body is colourless. Only the entodermal cells lining the narrow gastral cavity have a slight yellowish tinge, visible only in transmitted light.

The arms when fully extended attain a length of 5 mm., and a thickness of 0.02 mm. They are usually curved backward in a very graceful manner as shown on the plate.

#### HISTOLOGY.

On the arms there are two kinds of cnidoblasts (fig. 2) with different cnidocytes. In this respect our species is very similar to those Hydras which were examined by Jickeli, to whose figure (*Morphologisches Jahrbuch*, Band VIII., Tafel XVII., 12), I refer the reader.

Elements like those described by Jickeli (l.c.) as ganglia cells have been seen by me in the ectoderm of the tentacles of Hydra hexactinella. They appeared more clearly visible after staining with Beale's carmine than with hæmatoxylin, (Osmic acid in both cases.) I have not been able to distinguish a nucleus in these structures, the ganglionic nature of which appears to me a little doubtful. I find (fig. 2 *g*) that these cells cause by their presence the formation of a protuberance of irregular outline, being as they are, interposed between the thin covering ectoderm and the unyielding supporting lamella below. I think it not quite impossible that these large highly colourable bodies are the nuclei of sensitive cells similar to the palpocils of Sarsia-polyps.

I have not observed these structures in the fresh state. They can only be studied with advantage in osmic acid specimens.

Seen from the surface these problematic ganglia cells generally appear circular (fig 4), but sometimes, although rarely, processes are found (fig. 3), apparently radiating from them. These would support the hypothesis put forth by Jickeli, that the structures in question are ganglia cells.

Should we however, assume these structures to be only nuclei, then we must consider the very minute bodies in them as nucleoli.

This species has been discovered in a pool at Moore Park where it grows in abundance, by Mr. Whitelegge, who has kindly preserved specimens for me for description.

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#### EXPLANATION OF PLATE XLVIII.

Fig. 1.—*Hydra hexactinella*. R. v. L.

3:1 magnified.

Fig. 2.—Optical longitudinal section through portion of a tentacle of

*Hydra hexactinella*, osmic acid, Beale's carmine.

magnified 250:1.

(g) ganglia (?) cell.

Fig. 3 and 4.—Ganglia (?) cells seen from the surface. Osmic acid, Beale's carmine

magnified 400:1.

Fig. 3.—With two nervous (?) processes.

Fig. 4.—The usual kind without processes.